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lands. A few efforts to grow truck and oranges are known to have been failures. It is generally believed that the scrub is colder at night, and that frosts are liable to occur over these areas when they do not occur over the high pine land. There is no apparent reason for this, however, in the topography of the country."

Professor Whitney finds no chemical or physical difference in the soils which would account for the diverse vegetation, and is driven to the conclusion that "the only explanation for the difference in the character of the vegetation is that it is accidental, and that the one kind of crop or the other received a start and simply spread, the two kinds of vegetation not being capable of growing together." This is an explanation which does not explain, and we are not inclined to accept it as a final word.

ERWIN F. SMITH.

Forests of Wisconsin.¹—Those who are interested in the forestry problems of this country will desire to read this report from cover to cover. It is written by a competent forester. It deals with the past and present forest conditions of the so-called pineries of Wisconsin, *i.e.*, the northern half of the state. It is based on personal explorations and on data furnished by trustworthy lumbermen. To obtain the materials for this report Mr. Roth visited every county in the district, making a careful study of its forest cover. When one considers the infinitude of details involved in such a survey, the wonder is that the author has been able to represent things so clearly. No one can read this report without feeling that the work has been well done, or without wishing that Michigan and other pine-woods states might set on foot similar surveys. Unless something of this kind is done, either by the states or by the general government, we shall never know where we are in the matter of timber supply, or fully realize the necessity of forest care and conservation, until we are brought face to face with a scarcity of timber and all its resultant evils.

This survey shows that of the original 17,000,000 acres of forest in northern Wisconsin, 8,000,000 have been cut over by lumbermen; that 40% of this vast area is practically a desert; and that the remaining 60% is now producing nothing better than firewood. Much of this land is worthless for farming purposes and should be

¹ Forestry Conditions and Interests of Wisconsin. By Filibert Roth, Special Agent, with a discussion by B. E. Fernow, Chief of Division of Forestry. *Bulletin No. 16*, U. S. Dept. of Agriculture, Division of Forestry. Washington, Gov. Printing Office, 1898. 73 pp., 1 map.

reforested. The greater part of it is now owned by lumber firms that have removed all the merchantable lumber and would now be glad to sell it to the state for a merely nominal sum. By properly planting this land and policing it (to prevent forest fires), often merely by keeping out the fires, the state authorities might readily reforest the larger part of it, and thus add greatly to the wealth of the state. The *Bulletin* deals with such topics as topography, soils, climate, drainage, ownership, forest fires, changes on cut-over lands, the outlook, etc. Each of the more important timber trees is considered by itself and there are occasional notes on other vegetation. Since the pine lumber has been cut the country is drying out. This is shown in many ways, *e.g.*, by the disuse of corduroy roads, by the cultivation of former swamps, by the lessened flow in rivers, and finally by the fact that the hemlock spruce, which covers all the eastern, middle, and northeastern part of this great tract, is dying out. Of this species no young forests are coming on, and many of the old trees are dead at the top. This decadence is attributed to the fact that the hemlock has a superficial root-system, and is therefore sensitive to changes in the moisture content of the surface soil. That portion of the report devoted to forest fires and to the very detrimental changes they bring about on cut-over lands is particularly interesting. By neglect to reforest these lands it is estimated that the state of Wisconsin loses annually 800,000,000 feet board measure of merchantable lumber.

ERWIN F. SMITH.

Porter's Translation of the "Bonn" Text-book of Botany. — The first German edition of the *Lehrbuch der Botanik für Hochschulen*, prepared by Prof. Eduard Strasburger and his colleagues Schimper, Noll, and Schenk of the University of Bonn, appeared in 1894. The result of a felicitous coöperation upon the part of four able specialists working in the same laboratories and under the guidance of a master mind, this book immediately took high rank among works upon its subject. It has deservedly received much favorable comment and little adverse criticism. It has passed into its second German edition, and is now so generally known on this side of the Atlantic, as well as in Europe, that it is needless here to comment upon its qualities. The English edition,¹ lately prepared by Dr. H. C. Porter, Assistant Instructor of Botany at the University of Pennsyl-

¹ *A Text-book of Botany*. By Strasburger, Noll, Schenk, and Schimper. Translated from the German by H. C. Porter. Published by the Macmillan Co., London and New York, 1898. Price, \$4.50.